CLAIMS

1. A system for controlling a vehicle comprising a plurality of sensor-equipped hub units each having a rotation-side raceway member for a wheel to be attached thereto, a fixed-side raceway member to be fixed to a body of the vehicle and rolling bodies arranged between the two raceway members, each hub unit further having a sensor device attached thereto for detecting various items of data as to the vehicle, and a control unit for controlling the vehicle based on the data from the sensor devices,

the system being characterized in that the sensor devices of the hub units attached to respective drive wheels each have a ground control load sensor for measuring the ground contact load on the wheel, the control unit having a traction controller, whereby when the ground contact load value output from one of the ground contact load sensors while the vehicle is traveling straight is outside a predetermined range, the drive wheel is controlled so as to return the ground contact load value to the original value.

2. A system for controlling a vehicle according to claim 1 wherein when the ground contact load value output from the ground contact load sensor of one of the hub units is smaller than a predetermined value, a brake device of the wheel corresponding to said one hub unit is controlled so as to prevent occurrence of a skid of the wheel connected to said one hub unit.

3. A system for controlling a vehicle comprising a plurality of sensor-equipped hub units each having a rotation-side raceway member for a wheel to be attached thereto,

a fixed-side raceway member to be fixed to a body of the vehicle and rolling bodies arranged between the two raceway members, each hub unit further having a sensor device attached thereto for detecting various items of data as to the vehicle, and a control unit for controlling the vehicle based on the data from the sensor devices,

the system being characterized in that the sensor devices of the hub units attached to the respective wheels each have a ground control load sensor for measuring the ground contact load on the wheel, the control unit having a cornering controller, whereby when the ground contact load value output from one of the ground contact load sensors while the vehicle is cornering is outside a predetermined range, the drive wheel is controlled so as to return the ground contact load value to the original value.

4. A system for controlling a vehicle according to claim 3 wherein when the ground contact load on the wheel at the front is smaller than the predetermined range during turning, the engine output is controlled, and the wheel at the front on the outer side of the turn is braked to control the vehicle so as to produce a moment externally of the vehicle.

5. A system for controlling a vehicle according to claim 3 wherein when the ground contact load on the wheel at the front is greater than the predetermined range, the engine output is controlled, and control is effected to brake the wheels at the rear.

6. A system for controlling a vehicle according to claim 3 wherein in addition to the data from the sensor devices, data from an acceleration sensor, a wheel speed sensor and road

surface $\mu$ sensor is used.

7. A system for controlling a vehicle according to any one of claims 1 to 6 wherein the sensor device comprises a strain sensor and means for processing the output from the strain sensor to determine the ground contact load.

8. A system for controlling a vehicle according to any one of claims 1 to 6 wherein the sensor device comprises a resolver comprising a rotor provided on the rotation-side raceway member and a stator provided on the fixed-side raceway member, and a circuit for processing a signal produced in accordance with the value of an air gap between the stator and the rotor, the processing circuit having a unit for calculating the ground contact load on the wheel from the value of the air gap between the stator and the rotor.

9. A system for controlling a vehicle according to claim 8 wherein the resolver is a VR-type resolver.

10. A system for controlling a vehicle according to any one of claims 1 to 6 wherein the sensor device comprises a magnetostrictive sensor and means for processing the output of the magnetostrictive sensor to determine the ground contact load.

11. A system for controlling a vehicle according to claim 10 wherein the processing means comprises a rotation detecting unit for determining the rotational speed of the rotation-side raceway member from the number of repetitions of a variation in the output of the magnetostrictive sensor, a unit for averaging the outputs of the magnetostrictive sensor, and a unit for calculating the load on the hub unit from the averaged output obtained by the averaging unit.

12. A system for controlling a vehicle according to claim 11 wherein the fixed-side raceway member is an outer ring having an attaching portion to be fixed to the vehicle body, and the rotation-side raceway member comprises an inner shaft for the wheel to be mounted on and an inner ring fitted around the inner shaft, the magnetostrictive sensor being fixed to an end portion of the fixed-side raceway member so as to be opposed to an outer periphery of the inner ring.

13. A system for controlling a vehicle according to claim 10 wherein the rolling bodies are made of a nonmagnetic material.

14. A system for controlling a vehicle according to claim 13 wherein the hub unit further has a retainer, and the retainer is made of a nonmagnetic material.

15. A system for controlling a vehicle according to claim 10 wherein the sensor device detects the rotational speed of the raceway member from the number of repetitions of a variation in the output of the magnetostrictive sensor and also detects a force acting on the raceway member from the amplitude of the output of the magnetostrictive sensor.

16. A system for controlling a vehicle according to any one of claims 1 to 6 wherein the sensor device comprises a magnetostrictive sensor having a sensor face in an axial direction and a sensor face in a radial direction, and the magnetostrictive sensor detects all of the axial displacement of the rotation-side raceway member, the radial displacement of the rotation-side raceway member, the force acting on the rotation-side raceway member and data as to the rotation thereof.

17. A system for controlling a vehicle according to claim 16 wherein the rotational speed of the rotation-side raceway member to be determined from variations in the axial displacement or the radial displacement thereof with time and the speed of revolution of the rolling body to be determined from the number of repetitions of a variation in the strain of the rotation-side raceway member resulting from a force exerted by the rolling bodies are detected as the data as to the rotation.

18. A system for controlling a vehicle according to claim 16 wherein changes in residual magnetic flux of the rotation-side raceway member are detected to detect the axial displacement and the radial displacement of the rotation-side raceway member.